UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,942	08/28/2003	Itzhak Bentwich	050992.0300.CPUS06	1941

37808 7590 10/30/2006

ROSETTA-GENOMICS
c/o PSWS
700 W. 47TH STREET
SUITE 1000
KANSAS CITY, MO 64112

EXAMINER	
VIVLEMORE, TRACY ANN	

ART UNIT	PAPER NUMBER
1635	

DATE MAILED: 10/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/604,942	BENTWICH, ITZHAK	
	Examiner	Art Unit	
	Tracy Vivlemore	1635	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group I and the further election of SEQ ID NO: 37404 in the reply filed on September 5, 2006 is acknowledged. While the election of group I is made without traverse, applicant traverses the further restriction to a single sequence. Applicant argues, based on the waiver of 37 CFR 1.141 as described in MPEP 803.04, that up to 10 sequences may be searched in a single application and the examiner has not demonstrated the claimed sequences are an exceptional case necessitating examination of fewer than 10 sequences. It is noted that the waiver is permissive in nature and is not a requirement. Due to the exponential growth of the nucleic acid databases growth since this waiver was written in 1996, the search and examination of more than one sequence places an undue burden on the Office due to the complex nature of the search in terms of computer time needed to perform the search and the subsequent analysis of the search results by the examiner. It is noted that SEQ ID NO: 37405 is fully encompassed within the elected sequence; because a search of the elected sequence will identify prior art for SEQ ID NO: 37405, this sequence will be examined with the elected sequence.

Applicant further argues that SEQ ID NOS: 37418 and 37429 are related because they are each encoded on the plus strand of HCMV and are clustered within approximately 1000 nucleotides of one another. While these three sequences may have the same origin and similar expression profiles, the argument that the sequences are related is not found persuasive because the sequences are considered to be distinct

inventions due to their unique nucleotide sequence and a search of one sequence in the databases will not uncover prior art relevant to the other sequences.

The requirement is still deemed proper and is therefore made FINAL.

Priority

No support could be found in application 10/303,778 for SEQ ID NO: 37404. Therefore, the priority date accorded the disclosure of this sequence is December 5, 2002, the filing date of application 10/310,188. If applicant believes the '778 application discloses the claimed sequence, the SEQ ID NO designating this sequence in the '778 application should be pointed out in any response to this action.

Information Disclosure Statement

The information disclosure statement filed October 6, 2006 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to in reference B5 has not been considered.

Specification

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is

requested in correcting any errors of which applicant may become aware in the specification.

The disclosure is objected to because of the following informalities: it is noted that the word "complementary" is misspelled as "complimentary" at numerous points in the specification.

The disclosure contains figures labeled 6A, 6B and 6C, however the brief description of the drawings contains no description of figure 6C.

Appropriate correction is required.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In *re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 21-25 and 28-31 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3, 10, 13, 14 and 16 of copending Application No. 11/535,164. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims are directed to SEQ ID NO: 37404, disclosed by the instant specification as a bioinformatically detectable gene. The claims of the '164 application are directed to bioinformatically detectable gene sequences having the structural limitations of the instant claims. Therefore, the instant claims are a species of and would anticipate the generic claims of the '164 application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 21-25 and 28-31 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3, 8, 11, 12

and 14 of copending Application No. 10/605,838. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims are directed to SEQ ID NO: 37404, disclosed by the instant specification as a bioinformatically detectable gene. The claims of the '164 application are directed to bioinformatically detectable gene sequences having the structural limitations of the instant claims. Therefore, the instant claims are a species of and would anticipate the generic claims of the '838 application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Furthermore, the following serial numbers of co-pending applications contain claims in which an obviousness-type double patenting rejection might be applied or contain claims for which it cannot be determined if the claimed sequences conflict: 11/511,035 11/384,049 11/709,691 10/708,953 10/536,560 10/605,840 10/709,572 10/709,739 11/130,649 10/604,985 10/605,923 10/707,003 10/707,147 10707,975 10/708,204 10/708,951 10/708,952 11/418,870 10/604,726 10/604,926 10/604,943 10/604,945 10/604,984.

It is Applicants' burden to file appropriate terminal disclaimers for all relevant applications listed above. Furthermore, if Applicants are aware of any pending applications or patents, which are not listed above, it is Applicants' duty to disclose these applications or patents, and to submit an appropriate terminal disclaimer over these applications or patents as pertinent to the instant invention.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Objections

Claims 26 and 27 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 26 depends from claim 25 and recites the nucleic acid is capable of modulating expression of a target gene. It fails to limit the parent claim because it does not further define the compound of claim 25, but merely states a particular function that would be expected, absent evidence to the contrary, to be an inherent characteristic of the nucleic acids of claim 25. Claim 27 is objected to due to its dependence from claim 26.

Applicant is advised that should claim 21 be found allowable, claim 29 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). Claim 29 is directed to a probe comprising the nucleic acid of claim 21. Because claim 29 does not recite any additional components, the subject matter of claim 29 is the same as claim 21.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 30 meets the three-pronged test for compliance with 112, sixth paragraph described in MPEP section 2181.

Claim 30 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention and is also rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 30 recites means plus function language in accordance with the provisions of 35 USC § 112, sixth paragraph, directed to a gene expression inhibition system comprising the vector of claim 28 and a means for inserting said vector into a cell. Applicant points to paragraphs 24-26 of the specification as providing support for this claim. Paragraph 26 of the specification discloses that the invention includes a gene expression system including the vector and a "vector inserter, functional to insert the

vector into a cell". Because the specification does not disclose any specific structures to define the means for inserting the vector into a cell, this claim is indefinite.

While the prior art describes methods by which a vector can be transfected into cells, the specification does not disclose any specific structures to define the means for inserting the vector into a cell, nor does it provide a disclosure of what structures known from the prior art will provide the function of inserting a vector into a cell. Therefore, this claim fails to meet the written description provision of 35 USC § 112, first paragraph.

Applicant may overcome these rejections by (A) clarifying the record by amending the written description such that it expressly recites what structure, materials, or acts perform the function recited in the claim element; or (B) stating on the record what structure, materials, or acts perform the function recited in the means-plus-function limitation, as described in MPEP 2181.

Claim 31 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. This claim recites a gene expression detector functional to selectively detect expression of at least one gene. This claim is indefinite because the specification does not provide any definition of what constitutes a "gene expression detector" that would be functional to selectively detect expression of at least one gene. The claim is also indefinite because of the use of the relative terminology "selectively". Because it is unknown what constitutes a gene expression detector, it is unknown how these structures would selectively detect gene expression.

Claims 21-31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection.

New claim 21 recites at limitation (a) a sequence comprising at least 18 consecutive nucleotides of SEQ ID NO: 37404. This sequence is defined at paragraph 20719 as VGAM 1483 precursor RNA. The specification at paragraph 14 defines precursor RNAs as being 50-120 nucleotides in length but does not provide support for precursor RNAs that are as short at 18 nucleotides. It is noted that paragraph 14 refers to the RNAs 18-24 nucleotides in length, but this shorter RNA is produced from the precursor, it does not provide support for precursor RNAs shorter than 50 nucleotides in length. Claim 24, which recites that the nucleic acid of claim 21 is 18-24 nucleotides, contains new matter for the same reason.

Limitation (c) of claim 21, which also appears in claim 23, recites a sequence that is 46/78 identical to the nucleic acid of (a). Applicant points to table 1 as providing support for this limitation, stating that SEQ ID NO: 37429 is 78 nucleotides in length and forms a hairpin secondary structure in which 46 nucleotides are paired. While this might provide explicit support for the numbers 46 and 78, this does not provide support for sequences defined by limitation (a), which can be as short at 18 nucleotides and requires only 18 nucleotides identical to SEQ ID NO: 37404. For the purposes of prior art, this limitation has been interpreted as the percent identity equivalent to 46/78:

58.9%. Similarly, the limitation in claim 27 of a nucleic acid 15/24 complementary to a binding sequence has been interpreted as requiring 62.5% complementarity.

In addition to any other new matter described above, claims 22-31 contain new matter due to their dependence from claim 21.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 21, 29 and 31 are rejected under 35 U.S.C. 102(e) as being anticipated by Shoshan et al (US 2003/0165843).

Claim 21 is directed to an isolated nucleic acid 18-120 nucleotides in length that comprises a sequence 46/78 identical to SEQ ID NO: 37404. As described above, this limitation is interpreted as being a sequence that is 58.9% identical to the recited SEQ ID NO. Claim 29 is directed to a probe comprising the sequence of claim 21. Claim 31 is directed to a gene expression detector system comprising the probe and a gene expression detector functional to detect expression of at least one gene.

Shoshan et al. disclose a library of oligonucleotides capable of detecting RNA transcripts. One of these, designated SEQ ID NO: 17792, has a 56 base pair region that is 62.5% identical to SEQ ID NO: 37404, meeting limitation (c) of claim 21.

Shoshan et al. disclose at paragraphs 52-64 that the library can be used to detect RNA transcripts via methods such as Northern blots. A Northern blot detects expression of a gene and therefore is considered a gene expression detector according to claim 31.

Thus, Shoshan et al. disclose and anticipate claims 21,29 and 31.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 21 and 28-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shoshan et al. as applied to claims 21 and 29 above, and further in view of Choo et al. (US 6,007,988).

The claimed invention is directed to nucleic acids and probes comprising an isolated nucleic acid 18-120 nucleotides in length that comprises a sequence 46/78 identical to SEQ ID NO: 37404, and vectors and gene expression inhibition or detection systems that comprises these vectors and probes.

Shoshan et al. teach a library of oligonucleotides capable of detecting RNA transcripts. One of these, designated SEQ ID NO: 17792, has a 56 base pair region that is 62.5% identical to SEQ ID NO: 37404, meeting limitation (c) of claim 21. Shoshan et al. do not teach vectors comprising this sequence and means for inserting the vector into a cell.

It was well-known in the art at the time of invention to incorporate libraries of oligonucleotides into a vector for expression in cells such as bacteriophages. Uses of such display libraries include the quick and efficient combinatorial screening for the characterization of protein interactions. See, for example Choo et al., who teach methods of using phage display libraries to express a library of sequences that encode DNA binding proteins. Choo et al. further teach that cells are transfected with the library using the calcium precipitation method, which is a means for inserting a vector into a cell.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the library taught by Shoshan et al. as useful for detection of mRNA transcripts into a vector for use in a phage display method as taught by Choo et al. Choo et al. provide a motivation and reasonable expectation of success in incorporating the library taught by Shoshan et al. into a vector, teaching that phage display vectors are routinely used in the art to express libraries of oligonucleotide sequences on the surface of a phage.

Thus, the invention of claims 21 and 28-31 would have been obvious, as a whole, at the time of invention.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Vivlemore whose telephone number is 571-272-2914. The examiner can normally be reached on Mon-Fri 8:45-5:15.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Paras can be reached on 571-272-4517. The central FAX Number is 571-273-8300.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public. For more information about the PAIR system, see http://pair-direct.uspto.gov.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

PETER PARAS, JR.
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600

Tracy Vivlemore
Examiner
Art Unit 1635

TV
October 19, 2006